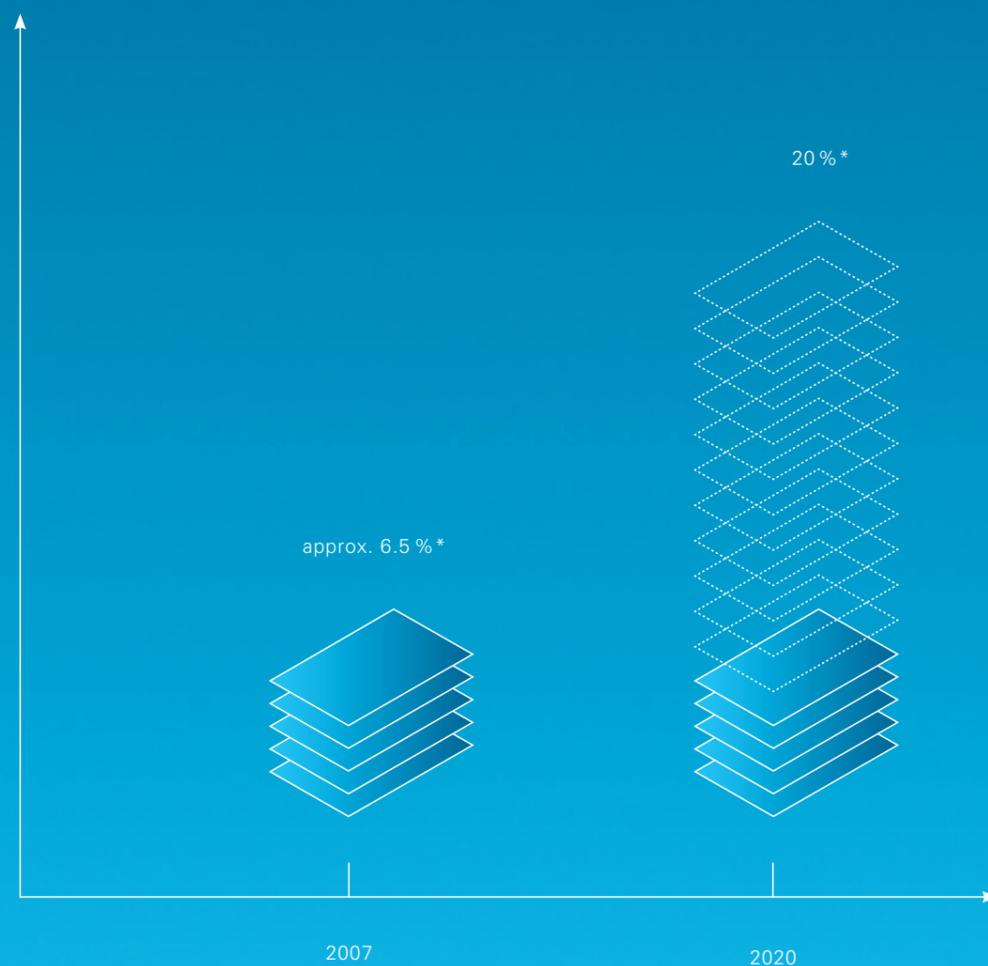


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# *THE RELIABLE WAY TO INCREASE YOUR YIELD*

*Independent consultancy and intelligent  
solutions for PV and wind systems*

## TURNING KNOW-HOW INTO RESULTS



With 100,000 terawatt hours of solar energy and 34,000 terawatt hours of wind energy, we have more potential energy available to us each hour than the entire human race consumes in a year. In order to make efficient use of renewable energy sources, more and more public and private customers are turning to intelligent PV and wind systems. Such systems are a long-term investment whose profitability is determined not only by the location and the quality of the system itself but also by the quality of its operation. With its unique consultancy and service portfolio, meteocontrol ensures that investors achieve maximum profitability for renewable energy projects. Worldwide.

\* The aim of the EEG (German Renewable Energy Law) is to help to increase the share of renewable energies in Europe's overall energy mix to 20 percent by the year 2020.



## HOLISTIC APPROACH FOR DAILY GAINS

*Why leading investors, financial players and project developers rely on meteocontrol's knowhow*

*PV and wind systems are highly complex installations. They require extremely high up-front construction and operational costs. Which makes it essential to call on the expertise of independent specialists from the very outset. meteocontrol helps you to systematically maximize the yield of your investment. As a dedicated consultant and technical service provider, meteocontrol is ideally positioned to minimize risks, lower total cost of ownership and secure the success of your investment.*

### THE ENERGY AND WEATHER EXPERTS

meteocontrol combines in-depth know-how across the entire PV and wind engineering spectrum with the insights gained from the latest meteorological data and forecasts. This cross-disciplinary approach has created a vast service portfolio offering maximum quality and reliability every step of the way.

### INDEPENDENT ADVICE

meteocontrol provides vendor-neutral, objective advice and realistic forecasts at all stages of a project – from the initial investment decision and construction of your PV or wind system through to actual operation. This protects the interests and ROI expectations of investors, financial players and project developers.

### INTERNATIONAL EXPERIENCE

For over 30 years now, meteocontrol has been supporting renewable energy projects around the world. The investment value of installations planned and implemented in close cooperation with meteocontrol has already passed the 10 billion euro mark. In fact, meteocontrol still monitors many of these installations to help optimize operations. This wealth of experience and know-how makes meteocontrol a valuable partner – for national and international projects of all sizes.



*With over 31,000 PV systems delivering over 6.7 GWp, meteocontrol is market leader in the professional monitoring of PV installations (dated 02/2013).*

## GUARANTEED QUALITY IS A MATTER OF PLANNING

*Ground-up reliability and efficiency – from yield reports to operations management*

*meteocontrol comes up with reliable forecasts, taking into account all relevant parameters, and offers comprehensive services for setting up your PV and wind system. The company therefore provides a sound basis for safeguarding your yields. Market-leading monitoring solutions for the operational phase of PV systems complement the extensive portfolio of services.*

### REPORTS

#### *Yield reports for wind and PV projects*

Is it worth investing in your PV or wind system? In order to answer this question reliably, meteocontrol analyses current weather data and all other key data for your system's location.

The reports for PV systems are based on precise global irradiance data which go back as far as the last ten years. meteocontrol uses satellite data from the University of Oldenburg, Germany, taking measurements at hourly intervals and with a spatial resolution of 2.5 km x 2.5 km.

For wind potential calculations, meteocontrol uses simple boundary layer models or complex meso-scale models depending on the site characteristics and the wind information available.

meteocontrol carries out on-site inspections in order to determine local factors influencing PV and wind projects such as shading, roughness, obstacles and geographical conditions. It combines these findings with its wealth of practical expertise and sophisticated simulation and calculation algorithms to come up with reliable forecasts as to the expected yields. meteocontrol's yield reports therefore give investors and operators maximum

planning certainty and are accepted by all banks as an important basis for approving financing proposals.

#### *Planning permission reports for wind systems*

From greenfield planning to implementation, meteocontrol produces all the necessary reports for your project:

- Noise emissions reports
- Shading reports
- Turbulence and extreme wind reports
- etc.

*Vendor audits  
for PV and wind systems*

*Yield reports and  
Technical Due Diligence  
for PV and wind systems*

*Technical acceptance  
and system rating  
for PV and wind systems*

*System monitoring  
for PV systems*

*Dismantling and disposal  
for PV systems*

*Technical operation management  
for PV systems*

*Quality assurance during  
system construction  
for PV and wind systems*



### *PROJECT EVALUATION, CONSTRUCTION SUPERVISION AND ACCEPTANCE* *Quality assurance from the planning phase through to implementation*

The yield of a PV or wind system depends largely on the correct configuration of the system and spec-compliant construction work. meteocontrol gives you the advantage of an all-embracing, objective and independent evaluation of projects. The company's technical consulting services include advice on the best system components and management of component tests. This eliminates the risk of sub-optimum configurations. Furthermore, customers have the added benefit of early fault finding. meteocontrol experts supervise progress on-site to check that all construction and assembly work is carried out to standard. The company's portfolio is rounded off by vendor audits and technical acceptance checks, vendor protocol audits and ratings and sample measurements. With the result that you can look forward to systems that go live on time and work to perfection.

### *REMOTE MONITORING AND YIELD ANALYSIS FOR PV SYSTEMS*

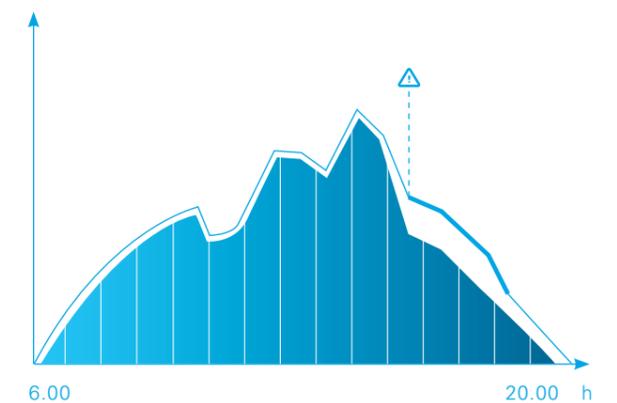
*All the facts at a glance with safer'Sun Professional*

Yield optimization is a key success factor when investing in a PV system. meteocontrol delivers a sophisticated, web-enabled management tool that shows solar operators all key performance indicators at a glance. This means operators are instantly alerted to drops in performance. The safer'Sun Professional intelligent monitoring system reads relevant yield values from the PV system and benchmarks these against simulated values, which are calculated on the basis of the current local meteorological conditions. An alarm is triggered if the actual values deviate significantly from the target values. This alarm is sent to the operator by e-mail, fax or text. safer'Sun Professional is suited to installations of all sizes and all operating requirements, maximizing efficiency in the remote monitoring, management and maintenance of PV systems.

### *TECHNICAL OPERATIONAL MANAGEMENT FOR PV SYSTEMS* *Maximum yield with the highest levels of predictability*

To secure PV yield in the long term, operators need the right maintenance procedures and a rapid response in the event of an outage. To meet these requirements, meteocontrol offers professional management services and ensures that outages and faults are detected immediately. If possible, faults are resolved online. If not, service personnel tackle the issue on site. All maintenance and repair work is meticulously managed and documented so it can be traced at all times. With meteocontrol, customers have a direct line to a dedicated expert who is always ready to help with questions and operational issues.

Performance in kW



*Securing PV yield with a professional monitoring solution. safer'Sun Professional benchmarks the performance values from the PV system against simulated values, which are calculated by adapting the configured yield of the system to the current local meteorological conditions.*

# BUILDING SUCCESS ON EXPERIENCE AND QUALITY

*For over 30 years, meteocontrol has been successfully providing its customers with independent and objective expert advice on how to intelligently capture energy. The company offers an end-to-end range of consulting services aimed at the efficient use of PV and wind systems. Throughout the world, meteocontrol has supported countless successful projects. Its expertise is a window of opportunity for any company looking to exploit the lucrative energy innovation business.*



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